



cgmcosmos

2^{ry} Distribution Switchgear

Up to 24 kV

IEC standards

Up to 27 kV

ANSI / IEEE standards

Location:

Date:

Speaker:

**Reliable innovation.
Personal solutions.**

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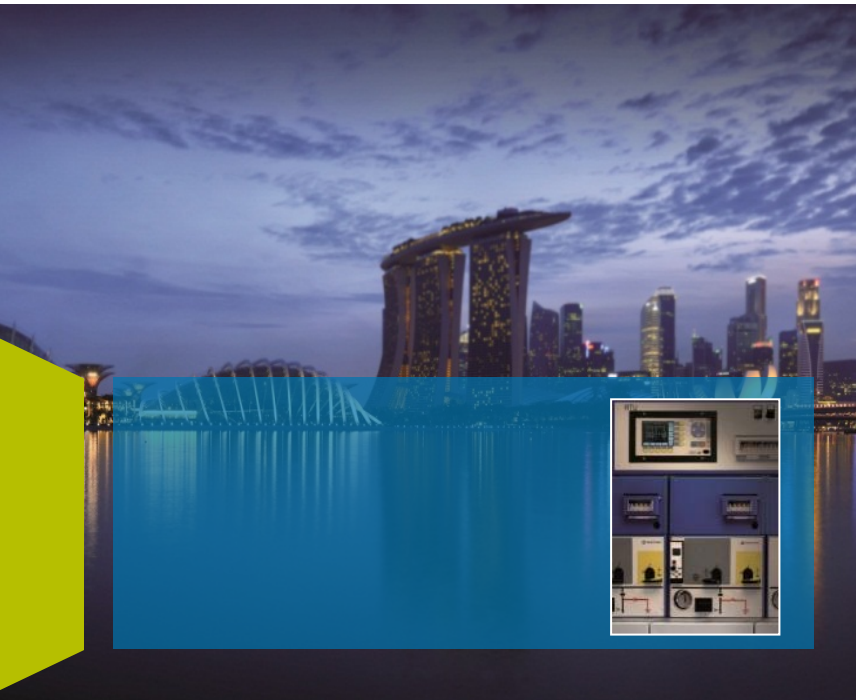
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30'

I. Introduction

Preface

cgmcosmos

Fully gas insulated modular and compact (RMU) system

- Up to 24 kV / 630 A / 25 kA 1-3 s / 50 - 60 Hz. IEC standards
- Up to 27 kV / 600 A / 21 kA 1-3 s / 50 - 60 Hz. IEEE-ANSI standards
- Launched in 2000
- Manufactured 100% in Europe
- +350,000 units in service in +60 countries
- Application: **DNS** (Distribution Network Solutions for secondary distribution)



Your business and DNS applications

Segments



Smart Grid
Transmission & Distribution
Generation



Infrastructures
Industrial
Tertiary



Wind
Solar
Dispatchable RES



II. Main features

Safety

- **Internal arc** tested AFL[R]
- All live components inside a **hermetically sealed gas tank**
- Mechanical and electrical **interlocks** to **prevent unsafe operations**

Reliability

- **Fully insulated** and **sealed** for life
- **Immersion tested** for 24 hours
- **100 % routine tested** at factory

Efficiency

- **Modular design** extensible to both sides via **ormalink**
- **Easy frontal access** to install and to test MV cables and fuses
- **Small size** and **light weight**

Sustainability

- **No SF₆** use during **installation**
- **En-of-life** management and **recycling**
- **Investment** in alternative **materials** and **own technology**

Continuous innovation

- **Smart-grid** ready system
- Updated ratings: Up to **25 kA** and **-30°C**
- **New metering** cubicles



III. Technical details

cgmcosmos range

Modular cubicles

l



Feeder function

p



Fuse protection function

v



Vacuum circuit breaker protection function

s



Busbar switch function
Optional earthing: **s-pt**

rb



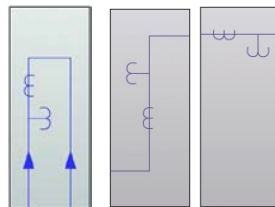
Busbar rise function
Optional earthing: **rb-pt**

rc



Cable rise function
Version for double cable: **r2c**

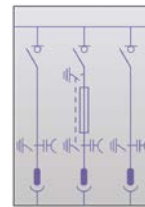
m



Metering function

Compact cubicles

2lp (RMU)



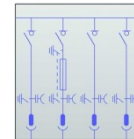
Fuse protection and feeder functions

Other options

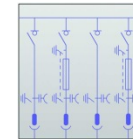
2l



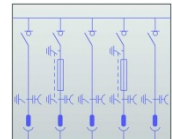
3lp



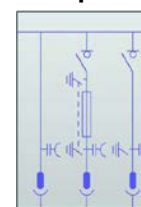
2l2p



3l2p

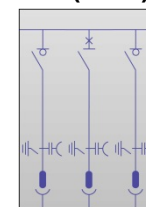


rlp



Fuse protection, feeder and busbar rise functions

2lv (RMU)



CB protection and feeder functions

III. Technical details

General ratings

cgmcosmos				IEC		ANSI / IEEE	
Rated Voltage		Ur	[kV]	12	24	15.5	27
Rated frequency		fr	[Hz]	50 / 60		50 / 60	
Rated normal current		Ir					
	Busbars and cubicle interconnection		[A]	400 / 630		600	
	Feeder		[A]	400 / 630		600	
	Output to transformer		[A]	200		200	
Rated short-time withstand current							
	with tk = 1 s – 3 s	Ik	[kA]	16 / 21 / 25		21	
	Peak value	Ip	[kA]	40 / 52.5 / 62.5		52.5	
Rated insulation level							
	Rated power-frequency withstand voltage [1 min]	Ud	[kV]	28 / 32	50 / 60	35 / 60	
	Rated lightning impulse withstand voltage	Up	[kV]	75 / 85	125 / 145	95 / 125	
Internal arc classification according to IEC 62271-200 (IEE Std C37.20,7)		IAC	AFL[R]	AFL 16 / 21 kA 1 s AFL[R] 21 / 25 kA 1 s		AFL 21 kA 1 s	
Degree of protection		IP		IIP67 (Gas tank) IP3X / IP4X (enclosure)			
Colour of equipment		RAL		Grey 7035 & Blue 5005			
Loss of service continuity category		LSC		LSC2			
Partition class				PM			

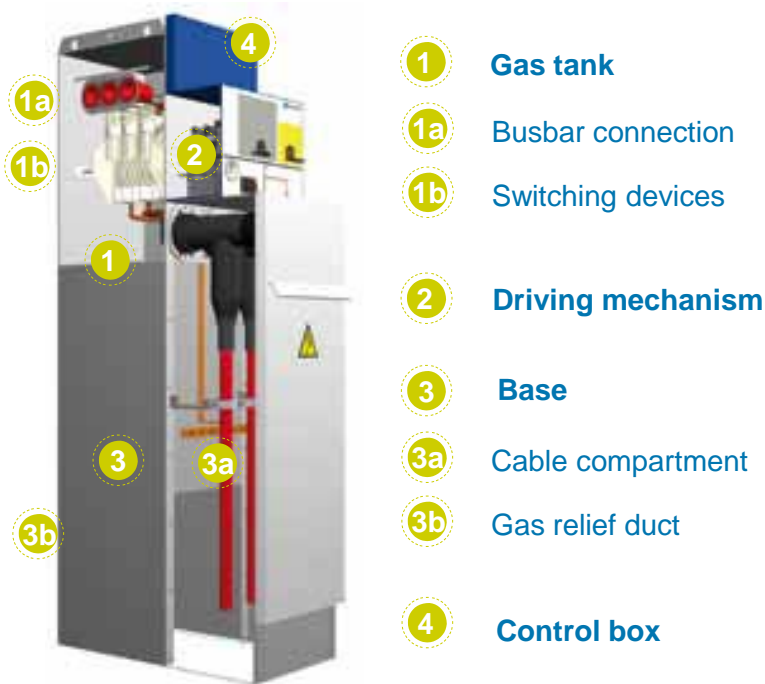
- Other local/regional specific standards: SANS (South Africa), HN (France), GB (China)...



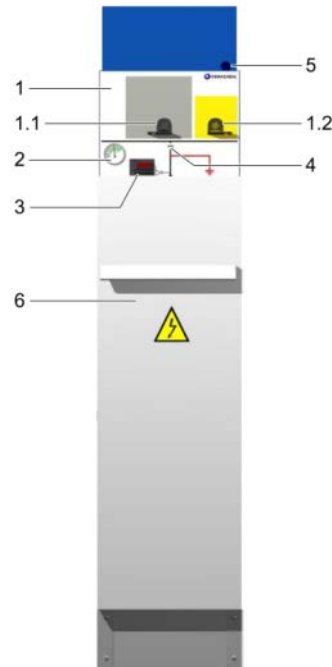
IV. Design characteristics

Constructive structure: Modular cubicles

General view

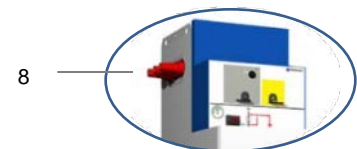


Detailed view



- 1. Mimic & driving mechanism cover:
 - 1.1 Switch-disconnector
 - 1.2 Earthing-switch
- 2. Manometer
- 3. Voltage indicator (**ekor.vpis**)
- 4. Switch-disconnector indication
- 5. Acoustic alarm (**ekor.sas**)
- 6. Cable compartment cover
- 7. **ormalink**
- 8. Side bushings

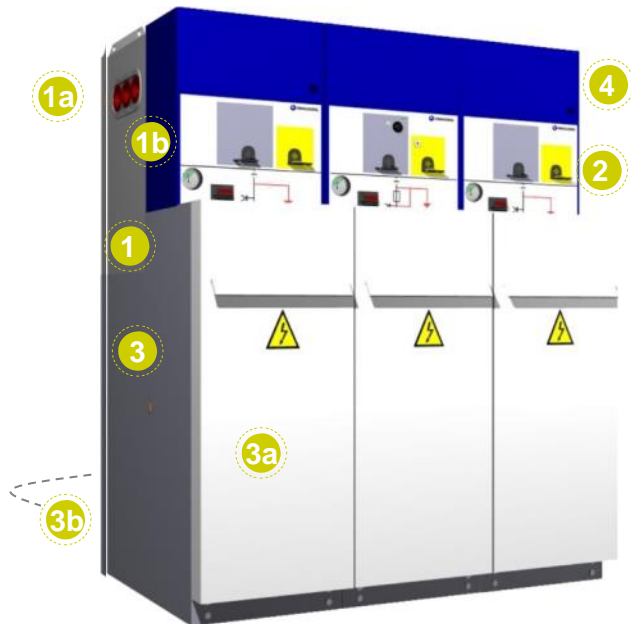
		l		p		v
Width	[mm]	365	470	470	480	480
Depth	[mm]	735	735	735	845	845
Height	[mm]	1300	1740	1300	1740	1740
Weight	[kg]	90	100	140	150	240



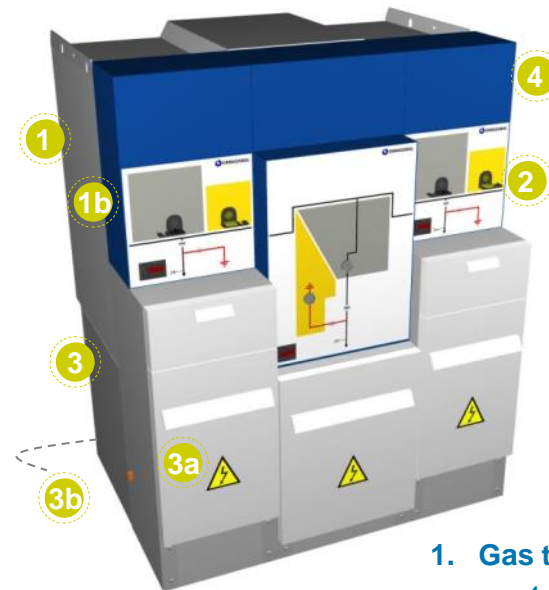
IV. Design characteristics

Constructive structure: Compact cubicles

cgmcosmos-2lp (RMU)



cgmcosmos-2lv (RMU)



1. Gas tank

- 1.a Busbar connection (if available)
- 1.b Switching devices

2. Driving mechanism

3. Base

- 3.a Cable compartment
- 3.b Gas relief duct

4. Control box

		2lp		2lv	
Width	[mm]	1190		1050	
Depth	[mm]	735		820	
Height	[mm]	1300	1740	1300	1700
Weight	[kg]	290	310	420	420

V. References

Project References

Utility



- Periodical tenders of the main worldwide utilities
- Non-stop supply to Endesa, Iberdrola, EDF, EDP, Electricity Authority of Cyprus, UTE, PLN....
- Spain: Smart-city Malaga (Endesa), STAR smart-grid (Iberdrola)
- Argentina: "Prosap" rural electrification project

End Users



- **Switzerland:** Gotthard tunnel
- **France:** Port of Brest
- **Cyprus:** Dhekelia & Larnaca desalinization plants
- **Spain:** La Palma airport
- **Thailand:** Bangkok International Suvarnabhumi airport

RES



- **Portugal:** Windfloat Vestas off-shore turbines
- **Greece:** Vestas Perdikovouni on-shore windfarm
- **USA:** Red Hills on-shore wind farm
- **France:** Renault-Gestamp Solar Photovoltaic power plant
- **Mexico:** Aura PV power plant

Main countries with cubicles up to 24 kV installed:

Spain
France
Cyprus
Argentina
Switzerland
Turkey
Portugal
Brazil
Austria
Israel
Poland



V. References

Solution Notes

Utility



End Users



RES



Villa Flandria TS
(Cooperativa Eléctrica de Luján)

Argentina



Gothard tunnel

Switzerland



La Palma airport

Spain



Aura PV plant

Mexico



Renault PV plant

France



Thank you!
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